SHUAI ZHOU

Junior undergraduate student, South China University of Technology, Guangzhou, China
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RESEARCH INTERESTS

Robotics, Heuristic Search, Multi-agent System, Motion Planning

EDUCATION

SOUTH CHINA UNIVERSITY OF TECHNOLOGY Sep 2022 — Jun 2026 (Expected)
Bachelor of Engineering in Robotics, Guangzhou, China *Cumulative GPA: 3.85/4.00, Rank: 5/56*

Core curriculum: Artificial Intelligences and technologies, Robotics theory and technology, Mechanic, Introduction to Engineering, Design and Manufacture.

UNIVERSITY OF CALIFORNIA, BERKELEY Aug 2023 — Dec 2023
Exchange Student, Berkeley, United States *Cumulative GPA: 4.00/4.00*

Core curriculum: Data Structures, Designing information devices and Systems I, Introduction to Solid Mechanics.

ACADEMIC EXPERIENCE

CARNEGIE MELLON UNIVERSITY, ARCS Lab Apr 2025 — Present
Remote Research Intern, Pittsburgh, United States *Supervised by Prof Jiaoyang Li*

- Research in Multi-Agent Path Finding (Multi-Robot Path Planning).
- Developing planning algorithms for Multi-Agent Path Finding with Deadlines and Kinematic Constrains.
- Extending ideas of Multi-Agent Path Finding to Multi-Arm Motion Planning.

UNIVERSITY OF CALIFORNIA, IRVINE, IDM Lab Mar 2025 — Present
Remote collaboration via RAP Lab, Irvine, United States *Collaborate with Prof Sven Koenig*

- Research in Multi-Agent Path Finding (Multi-Robot Path Planning).
- Developing anytime planning algorithms for Multi-Agent Path Finding with Asynchronous Actions (MAPF-AA).

SHANGHAI JIAO TONG UNIVERSITY, RAP Lab Apr 2024 — Present
Onsite Research Intern, Shanghai, China *Supervised by Prof Zhongqiang Ren*

- Research in Multi-Agent Path Finding (Multi-Robot Path Planning).
- Developing large scale planning algorithms for Multi-Agent Path Finding with Asynchronous Actions (MAPF-AA).
- One paper is accepted by **AAAI 2025**.
- One extended abstract accepted by **SoCS 2025**

PUBLICATIONS

LSRP*: Scalable and Anytime Planning for Multi-Agent Path Finding with Asynchronous Actions
Shuai Zhou, Shizhe Zhao, Zhongqiang Ren — **Under Review**

- Extended abstract version appears at **SoCS 2025**
- Main Contributions: This paper extends the previously proposed LSRP algorithm to an anytime version and is the first method capable of finding optimal solutions for Multi-Agent Path Finding with Asynchronous Actions (MAPF-AA). Given a reasonable amount of computation time, the proposed approach can efficiently handle instances with up to 1,000 agents, achieve near-optimal solutions, and eventually converge to the optimal one. Furthermore, we introduce a novel strategy to bypass local congestion and propose a new concept to correct the comparison of search states used in the previously proposed LSS method.

Loosely Synchronized Rule-Based Planning for Multi-Agent Path Finding with Asynchronous Actions
Shuai Zhou, Shizhe Zhao, Zhongqiang Ren — **In AAAI 2025**

- Main Contributions: This paper proposes a novel approach to Multi-Agent Path Finding with Asynchronous Actions, focusing on scalability over optimality. By integrating search-based (LSS) and rule-based (PIBT) planning, the proposed approach efficiently computes unbounded sub-optimal solutions for large-scale problems. Experiments demonstrate its ability to handle 10× more agents than baselines with only 25% longer makespan.

SERVICE

Reviewer: IROS 2025

SKILLS

- **OS**: Windows, Linux(Ubuntu)
- **Programming Languages**: Python, C/C++, Java, HTML,MATLAB
- **Version Control**: Git
- **Writing**: LaTeX, Office
- **Languages**: Chinese (native), English (fluent)
- **Test scores**: Gre (321), CET6 (594), CET4 (608), Duolingo (120)
- **Additional Courses**
  - CMU: 10301/601 Introduction to Machine Learning
  - CMU: 16-782 Planning and Decision-making in Robotics
  - Coursera: Robotics: Computational Motion Planning
  - Coursera: Robotics: Aerial Robotics

AWARDS

Outstanding Visiting Student Scholarship from USIEA Guangzhou, China
Awarded to the top student in the UC Berkeley Global program; received 6,000 CNY Mar 2024

Merit Student of South China University of Technology Guangzhou, China
Top student in the Robotics Engineering major, Class of 2022 Feb 2024

The Third Prize Scholarship by South China University of Technology Guangzhou, China
Top 10% of students, receiving 10,000 CNY Dec 2023

Exchange Student Scholarship from South China University of Technology Guangzhou, China
Awarded to outstanding students for overseas exchange, receiving 40,000 CNY Jul 2023

REFERENCES

Prof. Jiaoyang Li
Assistant Professor, Carnegie Mellon University
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Prof. Sven Koenig
Chancellor's Professor and Bren Chair, University of California, Irvine
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Department: Donald Bren School of Information and Computer Science

Prof. Zhongqiang Ren
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Department: University of Michigan - Shanghai Jiao Tong University Joint Institute, Automation

Dr. Shizhe Zhao
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